Professor Southall, in his book on geometrical optics, undertook to put in one volume most of that which is valuable on the subject, especially as applied to optical instruments. He was filled with enthusiasm, inspired by a sincere belief in the value of the subject and an ambition to supply the admitted deficiency in the English language.

> Partly with the object of supplying this deficiency, and partly also in the hope (if I may venture to express it) of rekindling among English-speaking nations interest in a study not only abundantly worthy for its own sake and undeservedly neglected, but still capable, under good cultivation, of yielding results of far-reaching importance in nearly every field of scientific research, I have prepared the following work. . . .

It is such enthusiasm as this that holds one to the severe labor of preparing a large book and of making it a good book. While it is doubtful whether any large number of scientific men will follow Professor Southall in his very high estimate regarding the relative value of geometrical optics and in his optimism respecting its future, the careful and exhaustive book which he has prepared will undoubtedly do much to bring the geometrical theory of optical instruments into greater favor in this country.

Professor Southall treats in successive chapters the fundamental properties of geometrical optics, the properties of rays of light, reflection and refraction at a plane surface, refraction through prisms, reflection and refraction of paraxial rays at a spherical surface, refraction of paraxial rays through thin lenses, the theory of optical imagery, lenses and lens systems, exact trigonometrical formulæ for tracing rays through spherical surfaces and centered systems of spherical surfaces, theory of an infinitely narrow bundle through an optical system, theory of spherical aberrations including Seidel's theory developed to aberrations of the third order, color-phenomena and chromatic aberrations, aperture, and field of view and brightness of images. It is seen from this how extensive is the subject-matter treated. In general, all the chief discussions of the more important topics have been given. This has led to a duplication in very many instances; particularly, many subjects are treated both geometrically and analytically. This, of course, is not to be regarded as a positive fault in an exhaustive treatise, for the one method will appeal to some and the other method to others. But probably many will wish, on reading the book, that especially the first part had been written more concisely and with fewer repetitions of subject-matter under different forms. This would not be, however, in harmony with the obvious plan of reproducing essentially all that is of value in the subject. The alternate plan is to adopt a definite point of view and to develop the subject systematically from that point of view.

Probably the greatest service rendered by Professor Southall has been in setting forth clearly and consecutively the splendid optical theories of the German writers of the last half century, particularly those of Seidel and Abbe. His book may inspire us to divide with the Germans the future developments in these lines. At any rate all who have an interest in the subject will thank him that he has so well done his part, for it will not be questioned that he has prepared the best and most exhaustive work on geometrical optics in the English language. So far as the question of completeness is concerned there seems room for regret, and that mostly on the part of practical opticians, only in that the theories are not illustrated more by numerical examples based on the glasses of commerce.

F. R. MOULTON

A Laboratory Manual of Inorganic Chemistry. By EUGENE C. BINGHAM, Ph.D. (Johns Hopkins), Professor of Chemistry, Richmond College, Richmond, Va., and GEORGE F. WHITE, Ph.D. (Johns Hopkins), Associate Professor of Chemistry, Richmond College, Richmond, Va. New York, John Wiley & Sons; London, Chapman and Hall, Limited. 1911. 12mo, pp. viii + 147. Cloth, $1.00 net (4s. 6d. net).

In the preface the authors state that, in their opinion, "a course in inorganic prepara-

tions and systematic qualitative analysis, with a few carefully chosen quantitative experiments afford the best background for the theoretical development of the science." They have, in order to avoid superficiality, cut the number of experiments down to a minimum, necessary for the understanding of the subject in its elementary phases. They have given more experiments than can be done in the normal year's work in school or college, hoping to stimulate the ambitious student to further work.

They have selected 33 typical experiments which includes the preparation of the common gases and acids and the preparation of several salts. This is followed by a study of the typical reactions of the metals and a course in qualitative analysis. The book also contains a few pages devoted to the quantitative proof of some of the fundamental laws upon which the science of chemistry is based. The material given is well selected and clearly stated, though, as the authors state in the preface, they have introduced little that is new. The question that each teacher must solve is whether it is better to cover a limited field thoroughly or to cover a broad field by selected examples. If a student's knowledge of chemistry is to be gained by one year's work this book could be used no doubt to advantage in connection with a text-book and a course of lectures; but if the subject is to be pursued further each one of the separate fields covered here would have to be gone over again in greater detail in order to attain a suitable ground for more advanced work.

J. E. G.

A Naturalist in the Bahamas. By John I. Northrop. October 12, 1861–June 25, 1891. A memorial volume edited with a biographical introduction by Henry Fairfield Osborn. New York, The Macmillan Co. $2.50.

The present volume brings together the papers of the late Dr. John I. Northrop, describing the zoological, botanical and geological results of his six months' collecting on the Bahama Islands. It includes also a narrative of the expedition contributed by Mrs. Northrop; a report upon the Bahaman crustaceans by Professor William H. Rankin; on the actinians, by Professor J. Playfair McMurrich; on the shells by Professor William H. Dall; on plants by Mrs. Northrop, Mr. Frank S. Collins and Dr. O. F. Cook; and a paper describing the new oriole *Icterus northropi,* by Dr. J. A. Allen. All of these papers are carefully republished and the volume forms altogether a substantial contribution to American zoological literature. . . . One closes the book with the feeling of keen regret that the life of Dr. Northrop could not have been spared. If his early promise brought together both from his own pen and from those of his associates the present results, what may not his years of maturity have contributed? He was another Lycidas and zoologists will remember him with such men as Harrington, Budgett and Balfour.

Bashford Dean

THREE FORMICID NAMES WHICH HAVE BEEN OVERLOOKED

Mr. S. A. Rohwer has kindly called my attention to two generic names which have been overlooked by all recent myrmecologists, including Dalla Torre, the author of the "Catalogus Hymenopterorum." One of these names is *Typhlomyrmex,* which was given by Gistel in 1856[1] to *Myrmica typhlops* Lund. On referring to Lund's paper[2] I find that *M. typhlops* is mentioned without a description, and since the insect is certainly not a *Myrmica* in the modern sense and can not be identified from the few notes on its habits (moving in files and carrying isopods), the name must be regarded as a *nomen nudum* and hence without any standing in nomenclature. And since Gistel cites no characters for his genus *Typhlomyrmex* but merely bases it on an invalid name, it, too, is without standing. Mayr, without knowing of Gistel's work, described in 1862 a genus *Typhlomyrmex* for a neotropical ant, *T. rogenhoferi*

[1] "Mysterien der europäischen Insectenwelt."

[2] "Lettre sur les Habitudes de Quelques Fourmis du Brésil, addressée a M. Audouin," *Ann. Sci. Nat.,* XXIII., 1831, p. 113–138.